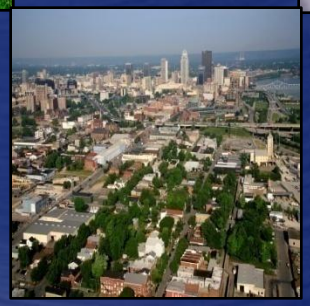
apcd
Louisville Metro
Air Pollution Control District

Air Pollution Control District

Protecting Louisville's Air Quality

METRO Louisville



Presented by
Lauren Anderson

April 15, 2010

Air Pollution Control in Louisville

Ahead of its time

1945 – Louisville Smoke Commission is established

1952 – Air Pollution Control District of Jefferson County is formed

1956 – Air Pollution Study is conducted in Rubbertown

Smoke over downtown Louisville 1943

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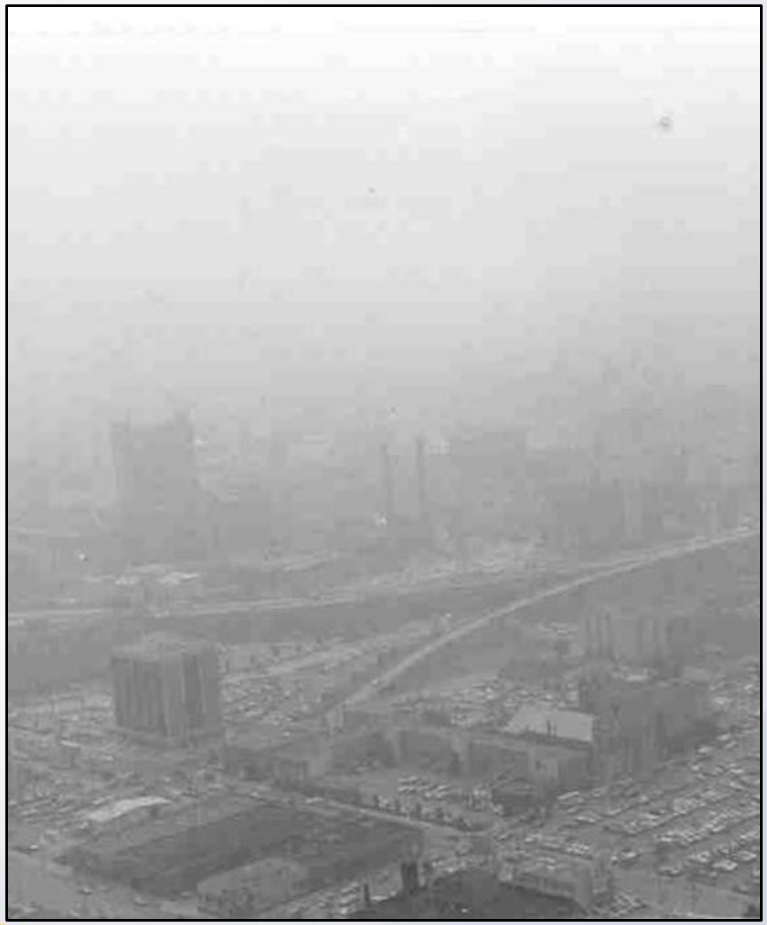
Clean Air Act of 1970



Louisville Skyline August 1973

- EPA was established to administer environmental laws
- Congress passed the CAA to protect air quality and public health
- The CAA required EPA to:
  - Identify criteria pollutants
  - Set National Ambient Air Quality Standards (NAAQS) for the criteria pollutants

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Criteria Pollutants

- Endanger public health and welfare
- Come from a variety of sources
- Common throughout the United States

Carbon Monoxide

Lead

Sulfur Dioxide

Oxides of Nitrogen

Ozone

Particulate Matter

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Carbon Monoxide

- What is it?
  - A colorless and odorless gas formed when carbon in fuel is not burned completely
- Where does it come from?
  - Gasoline engines
  - Manufacturing facilities
  - Burning wood

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Lead

- What is it?
  - A naturally occurring metal that is harmful to humans when inhaled or ingested
- Where does it come from?
  - Piston engine airplanes
  - Coal-fired plants

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Sulfur Dioxide

- What is it?
  - A highly reactive gas
  - Contributes to the formation of fine particle pollution and acid rain
- Where does it come from?
  - Coal-fired plants
  - High sulfur diesel fuel

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Oxides of Nitrogen

- What is it?
  - A group of highly reactive gasses
  - NO_2 is the indicator pollutant
  - Contributes to the formation of ground-level ozone, fine particle pollution, and acid rain
- Where does it come from?
  - Gasoline and diesel engines
  - Coal-fired plants

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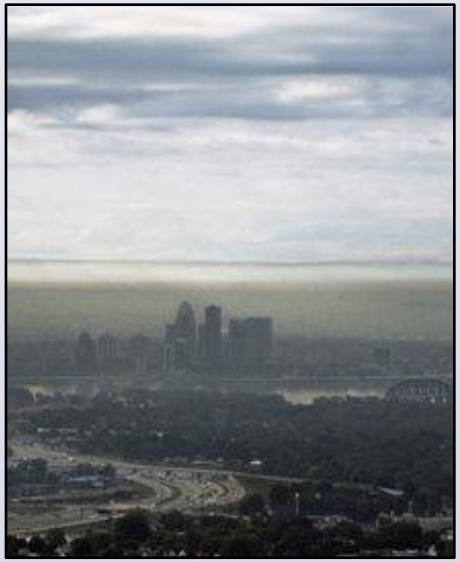
Ozone



- What is it?
  - Created through chemical reaction:

    $NOx + VOC + Sunlight = O_3$

- Where does it come from?
  - Gasoline engines
  - Gasoline vapors
  - Paint and solvents
  - Natural sources

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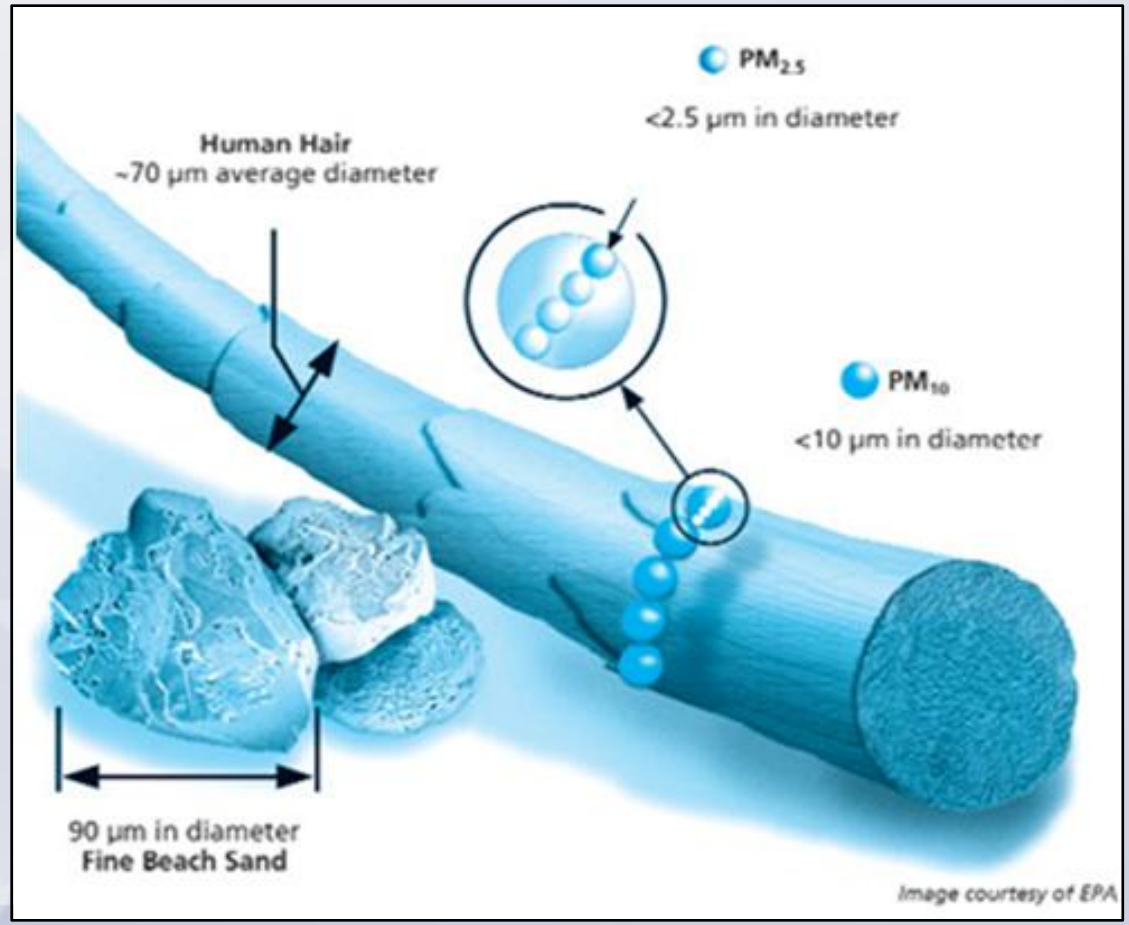
Particulate Matter

- What is it?
  - A complex mixture of particles and liquid droplets found in the air
  - Categories:

    Coarse Particles (PM_{10})

    Fine Particles ($PM_{2.5}$)



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Fine Particles

- Where do they come from?
  - Primary Emissions are directly emitted from a source
    - Coal-fired plants
    - Construction sites
    - Residential fireplaces
    - Industrial processes
    - Diesel engines
  - Secondary Emissions are formed when gases, such as SO_2 and NOx, react in the air
    - Coal-fired plants
    - Industrial processes
    - Gasoline and diesel engines

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NAAQS Attainment

March 2010 Status

Pollutant	Standard	Averaging Time	Attainment Status
Carbon Monoxide	9 ppm	8-hour	Attainment
	35 ppm	1-hour	Attainment
Lead	0.15 $\mu g/m^3$	Rolling 3-Mo Average	Attainment
	1.5 $\mu g/m^3$	Quarterly Average	Attainment
Nitrogen Dioxide	0.053 ppm	Annual Average	Attainment
	0.10 ppm	1-hour	Attainment
Particulate Matter (PM10)	150 $\mu g/m^3$	24-hour	Attainment
Particulate Matter (PM2.5)	15.0 $\mu g/m^3$	Annual Average	Nonattainment
	35 $\mu g/m^3$	24-hour	Attainment
Ozone	0.08 ppm	8-hour	Attainment
Sulfur Dioxide	0.03 ppm	Annual Average	Attainment
	0.14 ppm	24-hour	Attainment

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Emission Reduction: 1970 - present

1973 Phase out of lead in gasoline begins

1984 Vehicle Emission Testing begins in Louisville

1975 CAFE standards are issued

1993 Stage II vapor recovery program begins at Louisville gas stations

1995 Phase I of EPA's Acid Rain Program is implemented

1997 Air Pollution Control Board approves plan to reduce VOC's by 15% to achieve 1-hour ozone standard in Louisville

2004 EPA issues the Clean Air Nonroad Diesel Rule to phase in cleaner diesel engines

2005 EPA issues Clean Air Interstate Rule

2007 EPA issues the Heavy-Duty Highway Rule to reduce emissions from onroad diesel vehicles

1970 — 1990 — 2010

1974 Clean Air Act amended

1970 Clean Air Act amended to require attainment with NAAQS

1977 Clean Air Act amended

1990 Clean Air Act amended to include hazardous air pollutants, the Title V program, new source review, MACT standards, etc.

1994 Louisville adopts regulation to require reasonably available control technologies for NOx

1995 Reformulated gasoline is required in Louisville

2000 Phase II of EPA's Acid Rain Program is implemented

2003 Louisville establishes Lawn Care For Cleaner Air program

2005 Louisville's Strategic Toxic Air Reduction Program

STAR Program
Strategic Toxic Air Reduction

2007 CAFE Standards are strengthened

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Toxic Air Contaminants

- What are they?
  - Any air pollutant that is:
    - Harmful to public health, and
    - Not a criteria pollutant.
- Where do they come from:
  - Industrial plants
  - Coal-fired plants
  - Gasoline and diesel engines
  - Dry cleaners
  - Auto body shops
  - Paint, inks, solvents

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Toxic Air Contaminants

- EPA regulates toxic air pollution by source category through:
  - Technology-based standards (MACTs)
  - Work practice requirements
- State and local governments may set more stringent standards

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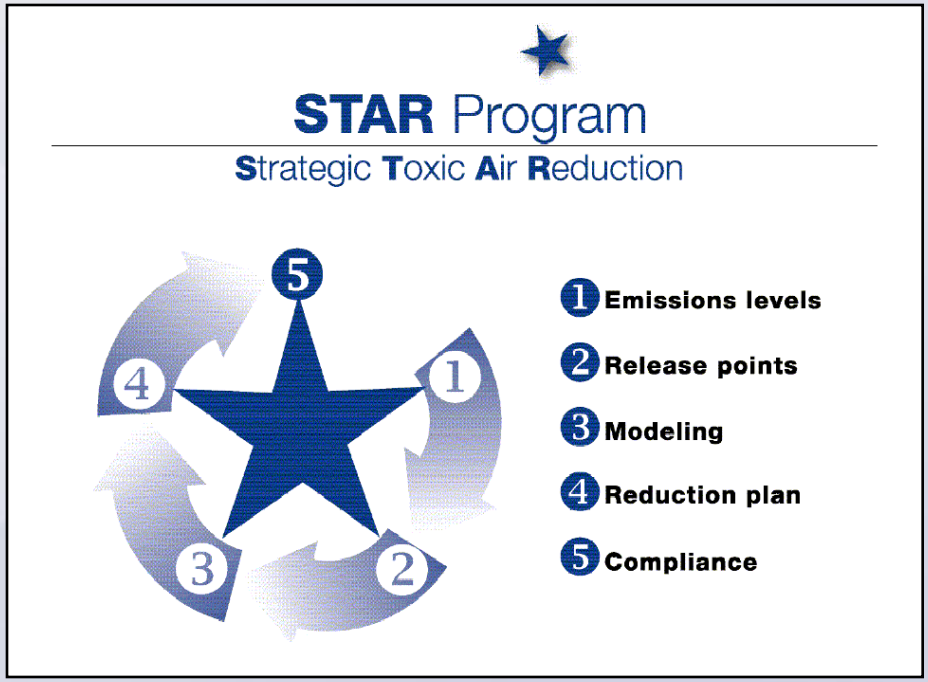
Strategic Toxic Air Reduction

- In 2005, the STAR program was passed to regulate toxic air pollution locally

- STAR sets health-based ambient air standards for TACs



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APCD Overview

- Whom do we report to?
  - US Environmental Protection Agency
  - KY Division for Air Quality
  - Air Pollution Control Board
  - Community
- How are we funded?
  - Grants
  - Permit Fees
  - Emission Fees
  - Program Fees
  - General Fund

Agency Goals

Ensure healthy air for breathing

Help local businesses meet air quality standards

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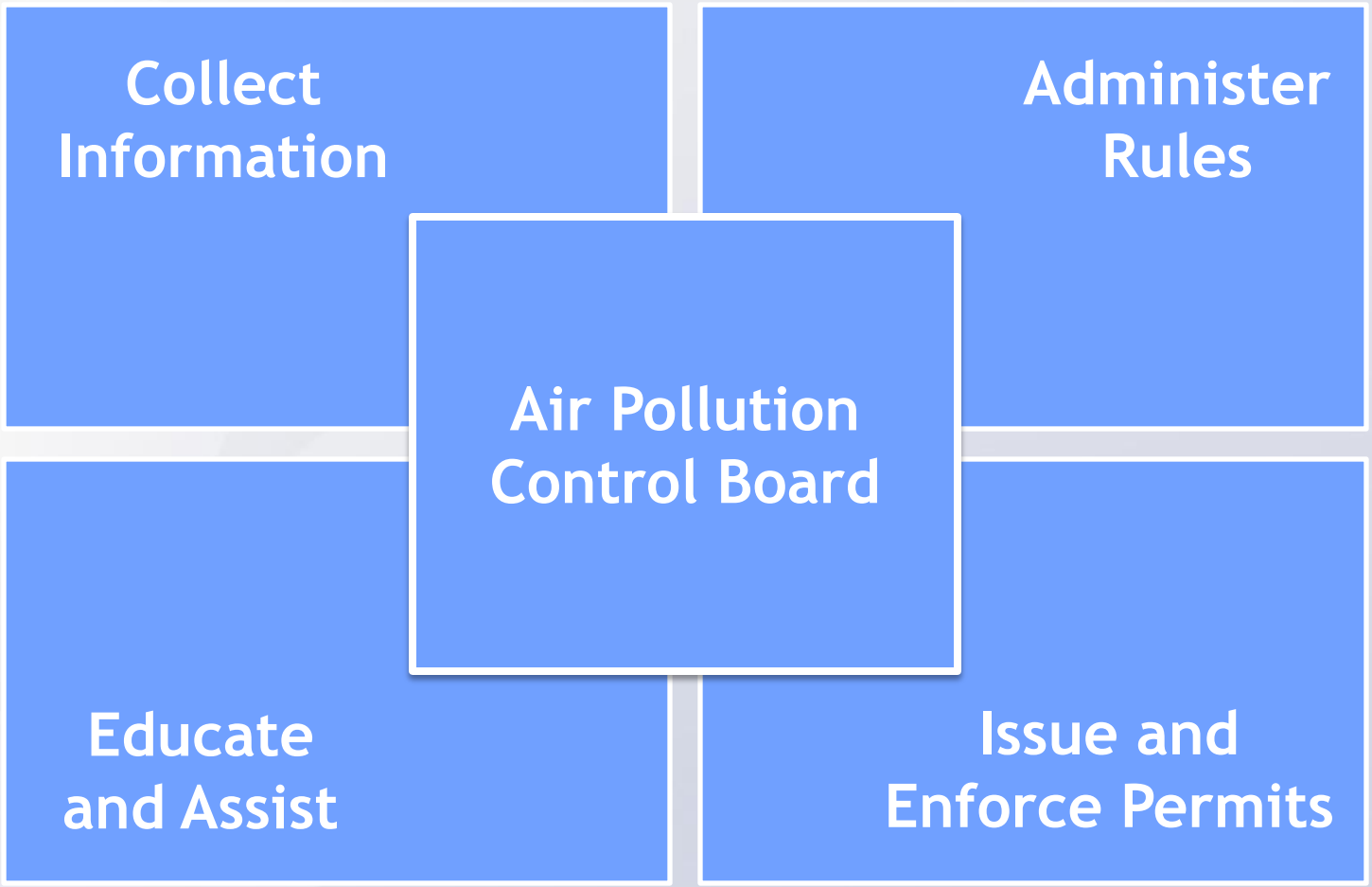
APCD Functions



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Air Pollution Control Board

- Created by statute
- Members appointed by the Mayor
- Adopt regulations to protect air quality
- Adopt Board Orders to settle violations
- Hold public hearings

Meets monthly on the 3rd Wednesday at 10 a.m.

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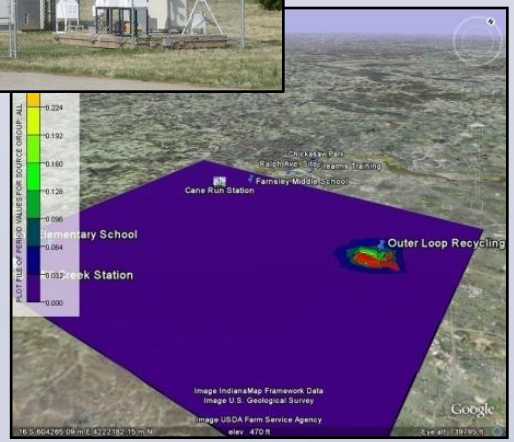
Collect Information

- Monitor ambient air quality
  - Criteria pollutants
  - Toxics
- Inventory emissions
  - Point sources
  - Area sources
  - Mobile sources
- Model emissions
  - Point sources
  - Area sources
  - Mobile sources



AQI Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health alert: everyone may experience more serious health effects
Hazardous	301 to 500	Health warnings of emergency conditions. The entire population is more likely to be affected.

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Administer Rules

- Support the Air Pollution Control Board
  - Coordinate rulemaking
  - Draft enforcement orders
- Administer federal programs
- Develop Jefferson County portion of Kentucky's State Implementation Plan (SIP)

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Issue and Enforce Permits

- Write permits
- Inspect sources
  - Permitted sources
  - Gas Stations
  - Dry Cleaners
  - Auto Body Shops
  - Asbestos
- Issue notices of violation
- Assess penalties
- Litigate when settlements cannot be reached

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Educate and Assist

- Provide community outreach programs
  - Kentuckiana Air Education (KAIRE)
- Assist businesses with air quality issues
- Investigate complaints
- Apply for grant funding
- Facilitate stakeholder involvement
- Participate in community initiatives
- Promote emission reduction programs
  - POWER Loan Fund
  - Lawn Care for Cleaner Air

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NAAQS Revisions

	Lead	NOx	SO_2	Ozone	PM	CO
Final	✓	✓				
Proposed			✓	✓		
Under Review					✓	✓

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NAAQS Attainment

Anticipated Status

Pollutant	Standard	Averaging Time	Attainment Status
Carbon Monoxide	9 ppm	8-hour	Attainment
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Lead	0.15 $\mu g/m^3$	Rolling 3-Mo Average	Status Uncertain
	1.5 $\mu g/m^3$	Quarterly Average	Attainment
Nitrogen Dioxide	0.053 ppm	Annual Average	Attainment
	0.10 ppm	1-hour	Status Uncertain
Particulate Matter (PM10)	150 $\mu g/m^3$	24-hour	Attainment
Particulate Matter (PM2.5)	10.0 to 14.0 $\mu g/m^3$	Annual Average	Nonattainment
	25 to 35 $\mu g/m^3$	24-hour	Status Uncertain
Ozone	0.060 to 0.070 ppm	8-hour	Nonattainment
Sulfur Dioxide	0.050 to 0.10 ppm	1-hour	Nonattainment

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Poised for Progress

- Community with history of success in making air healthier
- Stakeholders and residents extremely knowledgeable
- Will require changes by all
- Urgent need for innovative solutions

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Clearing the Air

A Seminar Series

	Day Seminars	Evening Seminars
March 30th	Air Quality 101	Air Quality 101
May 25th	Managing Buildings and Grounds for Air Quality *with special guest Kentucky Pollution Prevention Center*	Lawn Care for Cleaner Air
June 29th	Idle Reduction Tool Kit: Turn the Key for Cleaner Fleets	You and Your Car: The Key to Cleaner Air and Greater Fuel Efficiency
July 27th	Commercial Energy Efficiency *with special guest LG&E*	Residential Energy Efficiency *with special guest LG&E*
Aug. 31st	It All Adds Up: A Guide To Air Monitoring	It All Adds Up: A Guide To Air Monitoring
Sept. 28th	State of the Air *with Executive Director Lauren Anderson*	State of the Air *with Executive Director Lauren Anderson*

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Resources

- www.louisvilleky.gov/APCD
- Air Quality Index
  - 502-574-3319
  - www.airnow.gov
- KAIRE – www.helptheair.org
- www.epa.gov
- www.air.ky.gov

Metro Louisville

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